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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,614	08/05/2005	Joerg Issberner	262338US0PCT	8527
22850	7590	01/28/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			BERNSHTEYN, MICHAEL	
			ART UNIT	PAPER NUMBER
			1796	
			NOTIFICATION DATE	DELIVERY MODE
			01/28/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/517,614	ISSBERNER ET AL.	
	Examiner	Art Unit	
	Michael M. Bernshteyn	1796	

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 31 October 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-6 and 10-24 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6 and 10-24 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action follows a response filed on October 31, 2007. Claim 1 has been amended; claim 7 has been cancelled; no claims have been cancelled.
2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.
3. In view of the amendment(s) and remarks, the rejection of claims 1-7, 10, 13-15 and 17-21 under 35 U.S.C. 103(a) as being unpatentable as obvious over Fujikake et al. (U.S. Patent 6,084,032) in view of Werres (U.S. Patent 5,656,177) and the rejection of claims 11, 12, 16 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Fujikake et al. (U. S. Patent 6,084,032) in view of Werres (U.S. Patent 5,656,177) and further in view of Behr et al. (U. S. Patent 5,756,624) have been withdrawn.
4. Applicant's arguments with respect to claims 1-7 and 10-24 have been considered but are moot in view of the new ground(s) of rejection.
5. Claims 1-6 and 10-24 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 4, 13 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 13 and 14 recite "b) at least a copolymerizable hydrophobic monocyclic terpene hydrocarbon". It is not clear how many different components of b) should be copolymerized with monomer a), and what does the expression "at least" mean in this context? It could be the only component of b) or a copolymer should contain additional components of b). Appropriate correction is required.

Claim 4 recites "a monoethylenically unsaturated monocarboxylic, a monoethylenically unsaturated acid or both". It is not clear what monocarboxylic compound should be used. Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.
8. Claims 1-6, 10-14, 16 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Fujikake et al. (U.S. Patent 6,084,032) in view of Behr et al. (U.S. Patent 5,756,624).

With regard to the limitation of instant claims 1-4, Fujikake discloses a polymer composition comprises (A) a crosslinked polymer comprising (a) an α,β.-unsaturated carboxylic acid and (b) a compound having at least two ethylenically unsaturated

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groups, and (B) at least one polymer comprising N-vinylpyrrolidone as essential monomer (abstract).

The α,β -unsaturated carboxylic acid (a) is not limited to any particular species but includes, among others, **acrylic acid**, **methacrylic acid**, crotonic acid, maleic acid, itaconic acid, fumaric acid and other olefinic unsaturated carboxylic acids. These may be used either singly or in combination as a mixture of two or more. Among them, **acrylic acid** is most preferred since it is readily available at low cost and can give polymers having good performance (col. 1, line 63 through col. 2, line 4).

The compound (b) having at least two ethylenically unsaturated groups is not limited to any particular species and includes, among others, acrylate esters with two or more acryloyl moieties as derived from polyols such as ethylene glycol, propylene glycol, polyoxyethylene glycol, polyoxypropylene glycol, glycerol, polyglycerol, trimethylolpropane, pentaerythritol, saccharose, sorbitol, etc. (col. 2, lines 5-22).

The above-mentioned compound (b) having at least two ethylenically unsaturated groups is used preferably at an addition level of 0.05 to 10% by weight based on the crosslinked polymer (A), which is within the claimed range (col. 2, lines 23-26).

Fujikake does not disclose that compound (b) specifically belongs to the claimed monocyclic terpene hydrocarbon as in amended claim 1.

Behr discloses a copolymer consisting of monomer units derived monomers consisting of:

(A) 10 to 50% by weight of a terpene with no conjugated double bonds,

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B) 20 to 50% by weight of a member selected from the group consisting of olefinically unsaturated monocarboxylic acids containing 3 to 5 carbon atoms and anhydrides thereof, and olefinically unsaturated dicarboxylic acids containing 3 to 5 carbon atoms and anhydrides thereof, and

(C) 40 to 50% by weight of an ester selected from the group consisting of esters and semiesters of olefinically unsaturated monocarboxylic containing 3 to 5 carbon atoms and esters and semiesters of olefinically unsaturated dicarboxylic acids containing 3 to 5 carbon atoms, with the proviso that the sum total of said monomers is 100% by weight (abstract).

Both above references are analogous art because they are from the same field of endeavor concerning water-soluble copolymers. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate bicyclic terpene hydrocarbon in the adjusted weight range as taught by Behr for the copolymer of Fujikaka in order to obtain terpene acrylate copolymer with improved properties with reasonable expectation of success (US'624, abstract, col. 1, lines 50-60) and thus to arrive at the subject matter of instant claim 1.

With regard to the limitation of instant claims 5 and 6, the combined teaching of Fujikake and Behr does not disclose the proportion of neutralization of acid group in the monomer.

With respect to the proportion of neutralization of acid group in the monomer, in the absence of showing the criticality in the specification of maintaining the definite level of neutralization of acid group in the monomer, the skilled artisan would have

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recognized that the claimed proportions are result-effective variables for the polymer composition. In light of this, it has been found that, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation," *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955); and, "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation," *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the claimed proportions in the combined teachings of Fujikake and Behr because optimization of such result-effective variables ensures proper process-ability of monoethlenically unsaturated carboxylic composition.

With regard to the limitation of instant claim 10, Fujikake discloses that said α,β -unsaturated compound is not limited to any particular species but includes, among others, acrylate esters such as methyl acrylate, ethyl acrylate, isopropyl acrylate, butyl acrylate, octyl acrylate, 2-ethylhexyl acrylate, decyl acrylate, lauryl acrylate, stearyl acrylate, glycidyl acrylate, etc. These species are preferably used at an addition level of 0.1 to 20 parts by weight per 100 parts by weight of polymer (A), which is within the claimed range (col. 4, lines 20-49).

With regard to the limitations of claims 11, 12 and 16, Fujikaka does not disclose weight average molecular weight of the copolymer.

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With regard to the limitations of claims 11, 12 and 16, Behr exemplifies that weight average molecular weight of the obtained copolymer is between 1,100 and 9,600, which is within the claimed range (Examples 1-32, col. 3, line 25 through col. 9, line 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust weight average molecular weight of the obtained copolymer in the claimed range as taught by Behr for the copolymer of Fujikaka in order to obtain terpene acrylate copolymer with improved properties with reasonable expectation of success (US'624, abstract) and thus to arrive at the subject matter of instant claims 11, 12 and 16.

With regard to the limitation of instant claim 13, Fujikake discloses that the polymer composition containing carboxyl group can be produced by polymerizing in advance the monoethylenically unsaturated carboxylic acid (a) and the compound (b) having at least two ethylenically unsaturated groups, drying the thus-obtained crosslinked polymer (A) (col. 3, 46-50). Acrylic acid-based crosslinked polymer compositions containing carboxyl group were prepared using AIBN as the radical polymerization catalyst (col. 7, lines 52-55). Since the polymer composition containing carboxyl group carries carboxyl groups, when dissolved in water and then neutralized with a base such as sodium hydroxide or triethanolamine, gives a neutralized viscous liquid excellent in thickening property and flow characteristics (col. 4, lines 50-55).

With regard to the limitation of instant claim 14, Fujikake discloses that the concentration of the copolymerizable constituents in the aqueous polymerization

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mixture is within the claimed range (Examples 1-1 to 1-4, col. 5, line 28 through col. 7, line 20).

With regard to the limitations of claims 22-24, Fujikaka does not disclose that the copolymer can be used in a method for grinding and dispersing pigments in the presence of an auxiliary agent, for textile- and leather-treatment and as cleaning agent.

Behr discloses that the copolymers may be used as tackifiers in adhesives, in paints and as binders for printing inks, **textile sizing agents**, builders and hardeners. Copolymers with esters to which a relatively long-chain alcohol radical is attached are suitable for hydrophobicization, for example for **hydrophobicizing shoe and clothing leather** (col. 3, lines 117-23).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate Fujikaka and Behr's terpene acrylate copolymer for textile- and leather-treatment and as cleaning agent as taught by Behr with reasonable expectation of success (US'624, col. 3, lines 117-23) and thus to arrive at the subject matter of instant claims 22-24.

9. Claims 15 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Fujikake et al. (U.S. Patent 6,084,032) in view of Behr et al. (U.S. Patent 5,756,624) as applied to claims 1-6, 10-16 and 22-24 above and further in view of Werres (U.S. Patent 5,656,177).

The disclosure of Fujikake and Behr's references resided in § 8 is incorporated herein by reference.

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With regard to the limitations of claim 15, the combined teaching of Fujikake and Behr does not discloses that component b) is in the form of an oil-in-water emulsion that is formed from a hydrophobic phase (oil phase) at least one emulsifier and water.

Werres discloses the use of oil-in-water emulsion to prevent slime formation and inhibit the proliferation of microbes in water carrying system. The emulsion contains at least one of the following active substances as a component of the oil-phase: a saturated or unsaturated, open-chain or cyclic, normal or isomeric hydrocarbon; an acyclic, preferably monocyclic and/or bicyclic terpene, such as a **terpene hydrocarbon** and/or terpene alcohol; etc. The proportion of oil phase in these emulsions is between 1 and 90 wt. %. The emulsions are used in concentrations of 1 to 200 ppm (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the above mentioned substances as component (b) in the form of an oil-in-water emulsion as taught by Werres in Fujikake and Behr's terpene acrylate composition in order to o to prevent slime formation and inhibit the proliferation of microbes in water carrying system (US'177, abstract)); and thus to arrive at the subject matter of instant claim 15.

With regard to the limitations of claims 17-21, the combined teaching of Fujikake and Behr does not discloses a method for preventing organic, inorganic and mixed organic/inorganic deposits in a water-conveying system, in service water or wastewater systems, in cooling loops, in seawater desalination plants, in reverse osmosis systems, and for conditioning of brackish water and in the recovery of sugar from sugar beet, etc.

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With regard to the limitation of instant claims 17-21, Werres discloses that oil and water emulsions can be used as agents for the prevention of slime formation caused by microorganisms and for the prevention of microbial growth in water-bearing systems because Water carrying systems, such as water and waste water piping, cooling or heating cycles, cooling lubricant systems, drilling fluids, or industrial process waters for the transport of matter contain a variety of microorganisms (col. 1, lines 5-14). Also, these oil-water emulsions are suitable for the use against microorganisms in aqueous systems in the manufacture of sugar from sugar beets (col. 2, lines 33-35).

All of the above references are analogous art because they are from the same field of endeavor concerning water-soluble copolymers.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Fujikaka and Behr terpene acrylate copolymer for preventing organic, inorganic and mixed organic/inorganic deposits in a water-conveying system, in service water or wastewater systems, in the recovery of sugar from sugar beet, etc. as taught by Werres in the adjusted amounts with reasonable expectation of success (US'177, col. 1, lines 5-14), col. 2, lines 33-35), and thus to arrive at the subject matter of instant claims 17-21.

Thus, the combination of Fujikake, Werres and Behr renders claims 1-7 and 10-24 *prima facie* obvious in view of absent of unexpected results commensurate in scope of claims.

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Response to Arguments

10. Applicants traverse the rejection of claims 1-7, 10, 13-15 and 17-21 under 35 U.S.C. 103(a) as obvious over Fujikake et al. (U.S. Patent 6,084,032) in view of Werres et al. (U.S. Patent 5,656,177) and the rejection of claims 11, 12, 16 and 22-24 under 35 U.S.C. 103(a) as obvious over Fujikake et. al. (U.S. Patent 6,084,032) in view of Werres et al. (U.S. Patent 5,656,177) and further in view of Behr et al. (U.S. Patent 5,756,624).

Applicant's arguments have been fully considered but they are not persuasive.

As to Applicants arguments that the present invention stands in stark contrast to the disclosure of Fujikake et al, because the invention requires the reaction of a monoethylenically unsaturated, acid- group-containing monomer selected from the group consisting of monocarboxylic acids, dicarboxylic acids and sulfonic acids with at least a copolymerizable hydrophobic monocyclic terpene hydrocarbon, and in fact, the monocyclic terpene hydrocarbon reactant of the present claims is not a cross-linker (page 8, 2nd paragraph), it is noted that in view of substantially identical monomers and process of producing such product by radical copolymerization being used by Fujikawa and Behr from one side, and the applicant, it is the examiner position to believe that the product, i.e. water-soluble copolymer of Fujikawa and Behr is substantially the same as the water-soluble copolymer recited in claim 1, even though obtained by a different process, consult *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Since the USPTO does not have proper equipment to do the analytical test, the burden is now shifted to the applicant to prove otherwise.

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"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

11. Regarding to Applicants arguments that hydrophobic monocyclic terpene hydrocarbons such as limonene or dipentene are not suitable as cross-linkers (page 9, 1st paragraph), it is noted that Behr clearly discloses the above mentioned species as monomers which are used for the obtaining of terpene-acrylate copolymer (US'624, abstract).

12. As to Applicants arguments that not only does Werres's reference not describe an emulsion of a polymer material from the monomers described in the present claims, it does not describe a polymer prepared by radical polymerization (page 9, 2nd paragraph), it is noted that in current Office Action Werres's reference is used only as the third reference regarding dependent claims 15 and 17-21. Furthermore, it is worth to mention that "an applied reference may be relied upon for all that it would have reasonably suggested to one of ordinary skill in the art, including not only preferred embodiment, but less preferred and even non preferred". *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989).

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13. In response to Applicants argument that the scope of terpene compounds disclosed by Behr's patent is not limited to the monocyclic terpene of the present claims (page 10, 1st paragraph), it is noted that Behr clearly discloses the claimed component b) (col. 1, lines 50-60), and in the absence of showing the criticality of claimed monocyclic terpene hydrocarbon, it is the examiner position to believe that Behr's reference is pertinent to the claimed invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-Th 8-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Michael M. Bernshteyn
Patent Examiner
Art Unit 1796

MB
01/20/2008

RANDY GULAKOWSKI
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